DOCUMENT RESUME

ED 402 187 SE 059 459

AUTHOR	Leonard, Scott A., Comp.; Dobert, Raymond, Comp.
TITLE	Biotechnology: Commercialization and Economic Aspects, January 1993-June 1996. Quick Bibliography Series no. QB 96-10.
INSTITUTION	National Agricultural Library, Beltsville, MD.
REPORT NO	ISSN-1052-5378
PUB DATE	Sep 96
NOTE	49p.; Updates QB 94-20.
AVAILABLE FROM	U.S. Dept. of Agriculture, National Agricultural Library, Room 111 Public Services Division, Beltsville, MD 20705 (QB 96-10).
PUB TYPE	Reference Materials - Bibliographies (131)
EDRS PRICE	MF01/PC02 Plus Postage.
DESCRIPTORS	*Biotechnology; *Economics; Higher Education
IDENTIFIERS	AGRICOLA

ABSTRACT

This bibliography on the commercialization and economic aspects of biotechnology was produced by the National Agricultural Library. It contains 151 citations in English from the AGRICOLA database. The search strategy is included, call numbers are given for each entry, and abstracts are provided for some citations. The bibliography concludes with an author index and a subject index. (JRH)

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ED 402 187

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Biotechnology: Commercialization and Economic Aspects

January 1993 - June 1996

QB 96-10
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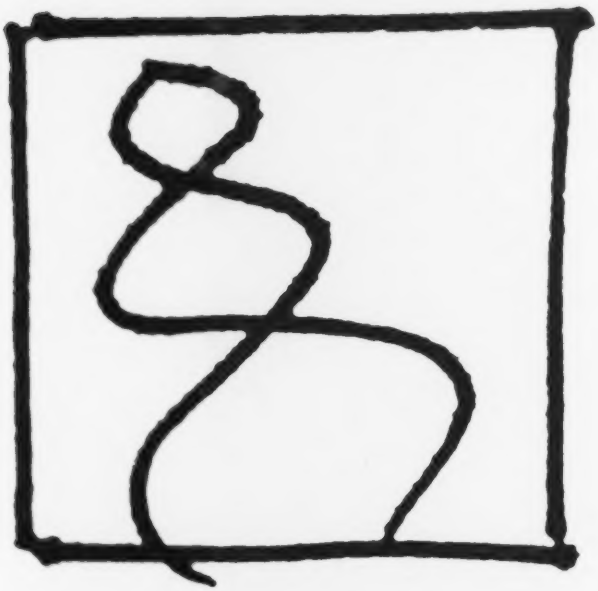

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151 citations in English from AGRICOLA

Compiled By:
Scott A. Leonard and Raymond Dobert
Biotechnology Information Center
Reference and User Services Branch
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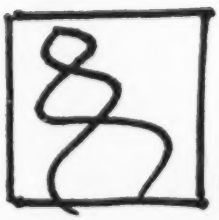

Biotechnology

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National Agricultural Library Cataloging Record:

Leonard, Scott A.
Biotechnology : commercialization and economic aspects.
(Quick bibliography series ; 96-10)
1. Biotechnology--Economic aspects--Bibliography.
2. Genetic engineering--Economic aspects--Bibliography.
I. Dobert, Raymond. II. Title.
aZ5071.N3 no.96-10

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De Jong, R. Comparison of two soil-water models under semi-arid growing conditions
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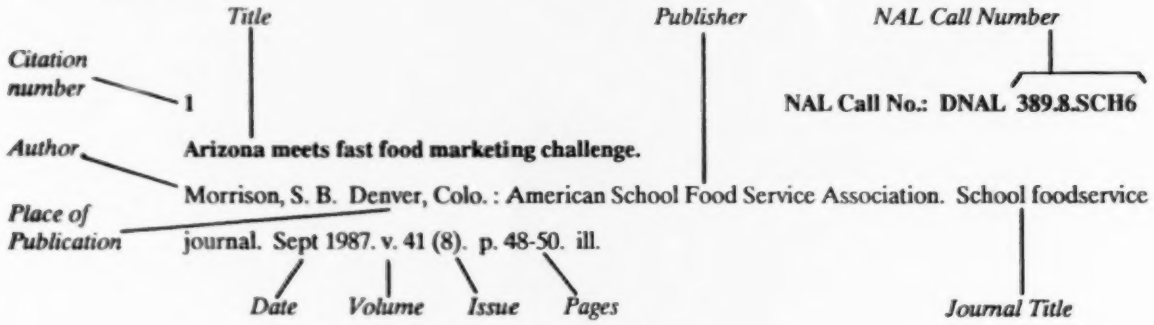

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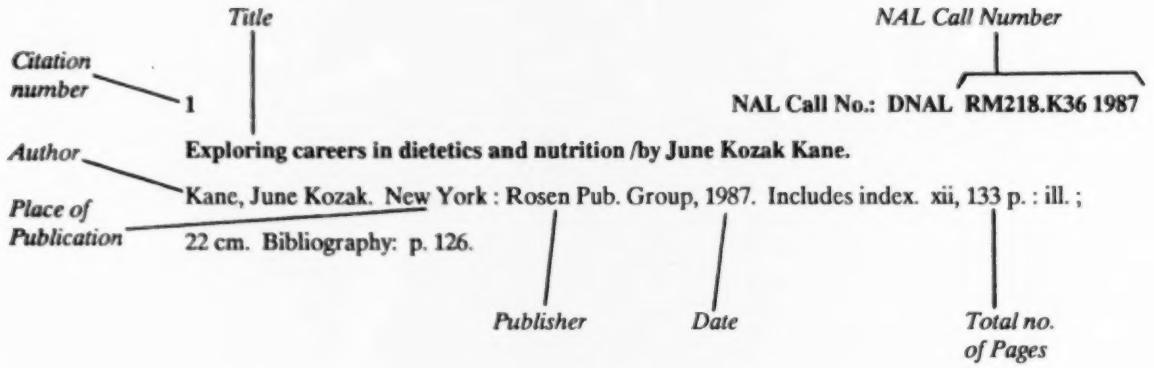
Title
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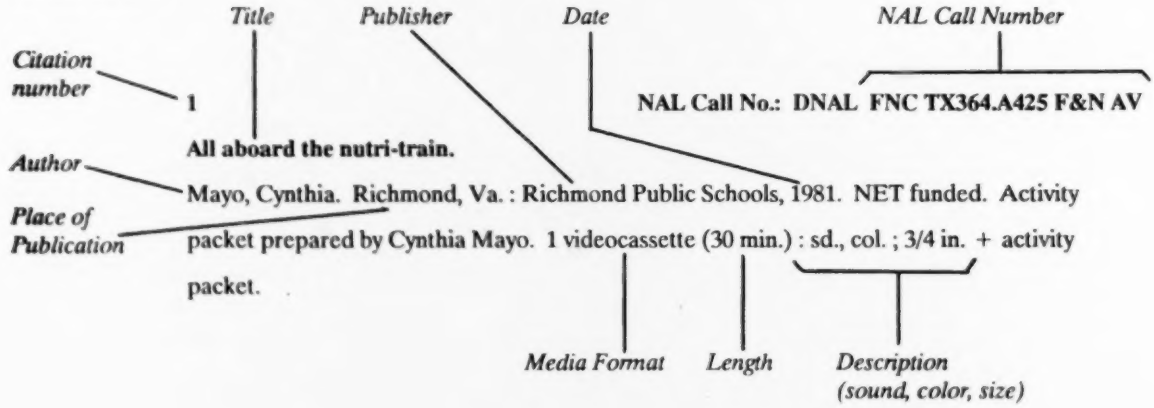
Citation number
1
NAL Call No.: DNAL RM218.K36 1987
Author
Exploring careers in dietetics and nutrition /by June Kozak Kane.
Kane, June Kozak. New York : Rosen Pub. Group, 1987. Includes index. xii, 133 p. : ill. ;
Place of Publication
22 cm. Bibliography: p. 126.
Publisher
Date
Total no. of Pages

Audiovisual:



Biotechnology: Commercialization and Economic Aspects

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2	21632	(#1 in TI) or (#1 in DE)
3	55365	GENOME* or GENETIC* or BIOTECH* or BIOENGINEER* or TRANSGEN* or GENE or GENES or DNA or RNA or ((BIO) near1 (TECH*)) or ((CELL) near1 (TISSUE)) or ((CELL) near1 (CULTURE))
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5	383	#2 and #4
6	372	#5 and (LA=ENGLISH)
7	256	#6 and (UD=9301:9999)

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1. **NAL Call No.: QH442.G4522**
Agri-diagnostics to market biotech-based, fast field analysis system to test for gasoline contamination.
Crouse, G. *Biotech-Dly.* v.1(11): p.4 (1992 Aug.)
Descriptors: immunoassay-; polluted-soils; polluted-water; biotechnology-; quantix-environmental-work-station

2. **NAL Call No.: QH442.G456**
Agricultural biotechnology companies set their sights on multi-billion $$ markets.
Niebling, K. *Genet-eng-news* v.15(13): p.1, 20-21. (1995 July)
Descriptors: private-firms; private-companies; biotechnology-; agriculture-; biotechnology-; genetic-engineering; crops-; economic-viability; market- economics

3. **NAL Call No.: 500-Am322A**
Algal diversity and commercial algal products.
Radmer, R. J. *Bioscience* v.46(4): p.263-270. (1996 Apr.)
Special Issue: Marine Biotechnology.
Descriptors: algae-; diversity-; taxonomy-; products-; foods-; drugs-; biotechnology-

4. **NAL Call No.: QH442.B5**
An algorithm for the oversight of field trials in economically developing countries.
Miller, H. L.; Altman, D. W.; Barton, J. H.; Huttner, S. L. *Bio/technology-Nat-Publ-Co* v.13(9): p.955-959. (1995 Sept.)
Includes references.
Descriptors: genetic-engineering; recombinant-dna; transgenic-plants; microorganisms-; field-experimentation; risk-; algorithms-; developing- countries; genetically-modified-organisms

5. **NAL Call No.: S494.5.S86S8**
Biodiversity, biotechnology, and institutions among crops: situation and outlook.
Gotsch, N.; Rieder, P. *J-sustain-agric* v.5(1/2): p.5-40. (1995)
Includes references.
Descriptors: diversity-; ecosystems-; species-diversity; genetic-variation; crops-; genetic-resources; biotechnology-; genetic-engineering; seed-industry; markets-; legal-rights; patents-; intellectual-property-rights

6. **NAL Call No.: S494.5.B563N33**
Biopesticides and economic democracy.
Kloppenburg, J. Jr. *NABC-rep* (1): p.75-81. (1989)
In the series analytic: Biotechnology and sustainable agriculture : Policy alternatives / edited by J.F. McDonald. Paper presented at the first annual National Agricultural Biotechnology Council meeting, May 22-24, 1989.
Descriptors: pest-control; biological-control; biotechnology-; sustainability-; social-impact; technical-progress; social-participation

7. **NAL Call No.: SB123.57.I55-1992**
The biosafety aspects of commercializaiton: insect resistant cotton as a case study.
Fuchs, R. L.; Berberich, S. A.; Serdy, F. S. *Proceedings of the 2nd International Symposium on the Biosafety Results of Field Tests of Genetically Modified Plants and Microorganisms May 11-14, 1992, Goslar, Germany* p.171-178 (1992)
edited by R Casper and J Landsmann. Braunschweig, Germany : Biologische Bundesanstalt fur Land- und Forstwirtschaft.
Includes references.
Descriptors: gossypium-hirsutum; genetic-engineering; genetic-resistance; insect-control; case-studies

8. **NAL Call No.: A00040**
Biotech stymied by red tape.
Gerry, R. *Chem-Bus. [New York, N.Y. : Schnell Pub. Co.]* v.14(6): p.29-30 (1992 June)

Descriptors: regulations-; usda-; field-tests; product-development; economic-impact; legislation-; USA-

9. **NAL Call No.: 99.8-F7632**
Biotechnical progress in forestry: an optimal control analysis.
Bhattacharyya, A.; Lyon, K. S. *For-sci* v.40(1): p.120-141. (1994 Feb.)
Includes references.
Descriptors: forestry-; biology-; research-; expenditure-; technical-progress; economic-impact; mathematical-models; shadow-value

Abstract: A discrete time optimal control model is constructed in this paper to measure the gains from biological research expenditures in forestry This is an extension of the timber supply model of Sedjo and Lyon (1990). We posit a production function for biotechnological improvements, which take the form of improved varieties of seeds and improved silvicultural practices. The model takes into account afl the dynamic benefits from a dollar of research spending in terms of its effect on the current and future levels of technology, and of the future timber supplies resulting from the improved seeds and management practices. These separate effects are tracked in the model using state variables for the "index of technology" and for the "embodied yield index." The results of implementing the model on data for the U.S. South are reported. The empirical results indicate that biotechnical productivity gains in the range of 8 to 16% over a 25-yr period are sufficient to justify investment in biotechnology at historic levels.

10. **NAL Call No.: TP248.195.D44S27--1993**
Biotechnologies in developing countries : present and future.
Sasson, A. Paris : Unesco Publishing, 1993- v. : ill., Includes bibliographical references. v. 1. Regional and national survey.
Descriptors: Biotechnology-Economic-aspects-Developing-countries; Biotechnology-Social-aspects-Developing-countries; Biotechnology-Developing-countries-Forecasting; Biotechnology-industries-Developing-countries; Industrial-surveys-Developing-countries

11. **NAL Call No.: HT401.A36**
Biotechnologies in the agro-food sector: a limited impact.
Fanfani, R.; Green, R. H.; Zuniga, M. R. *Agric-human-values* v.10(2): p.68-74. (1993 Spring)
Paper presented at the conference on "Biotechnologies and Agriculture: Technical Evolution or Revolution?" held March 28-29, 1992, Rome, Italy.
Descriptors: biotechnology-; agroindustrial-sector; economic-impact; postagricultural-sector; food-industry; food-biotechnology

12. **NAL Call No.: S69.R47**
Biotechnology, alternative agriculture and public agricultural research in Maine.
Anderson, M. W. *Res-Maine-People-Agric-Exp-Stn-Univ-Maine. Orono, Maine : The Station.* v.1(4): p.8 (1988 May)
Includes references.
Descriptors: sustainability-; alternative-farming; biotechnology-; genetic-engineering; genetic-improvement; research-policy; economic-impact; social- impact; farm-inputs

13. **NAL Call No.: TP248.195.P47S37-1991**
Biotechnology and African economies: long-term policy issues.
Mugabe, J. O. *Biotechnologies in perspective socio-economic implications for developing countries edited by Albert Sasson and Vivien Costarini. Paris : UNESCO* p.113-121 (1991)
Descriptors: agriculture-; biotechnology-; economic-policy; research-policy; economic-development; Africa-

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14. **NAL Call No.: TP248.195.P47S37-1991**

Biotechnology and economic restructuring: towards a new technological paradigm in agriculture.

Otero, G. *Biotechnologies in perspective socio-economic implications for developing countries edited by Albert Sasson and Vivien Costarini. Paris : UNESCO* p.27-36 (1991)

Includes references.

Descriptors: biotechnology-; agriculture-; development-policy; economic-development; developing-countries

15. **NAL Call No.: DLC S494.5.B563-H63-1991; ArU S494.5.B563H63-1991**

Biotechnology and the future of world agriculture : the fourth resource.

Hobbelink, H. London : Atlantic Highlands, N.J. : Zed Books, 1991. 159 p. : ill., Includes bibliographies and index.

Descriptors: Agricultural-biotechnology-Forecasting

16. **NAL Call No.: TX341.C6**

Biotechnology bringing new era to agriculture.

Nutr-Week v.22(44): p.4-5. (1992 Nov.)

Descriptors: agricultural-development; biotechnology-; agricultural-production; food-quality; rural-communities; agribusiness-; agricultural-manpower; economic-impact

17. **NAL Call No.: aZ5071.N3**

Biotechnology: commercialization and economic aspects: January 1991-January 1994.

Guenther, K.; Colbert, A.; McCarthy, S.; Dobert, R. *Quick-bibliogr-ser. Beltsville, Md., National Agricultural Library* (1994 Apr.)

Descriptors: biotechnology-; economic-impact; markets-; marketing-; bibliographies-

18. **NAL Call No.: TP248.195.D48B55-1992**

Biotechnology : economic and social aspects : issues for developing countries.

DaSilva, E. J.; Ratledge, C.; Sasson, A. Cambridge [England] ; New York, NY, USA : Cambridge University Press, 1992. xiii, 388 p. : ill., "Published in association with UNESCO."

Descriptors: Biotechnology-Developing-countries

19. **NAL Call No.: TP248.2.B536--1994**

Biotechnology for a clean environment : prevention, detection, remediation.

Organisation for Economic Co operation and Development. Group of National Experts on Safety and Biotechnology. Paris : Organisation for Economic Co-operation and Development, c1994. 201 p. : ill., " ... report of the Ad Hoc Group of Government Experts on Biotechnology for a Clean Environment ... set up by the OECD Committee for Scientific and Technological Policy"--Foreword.

Descriptors: Biotechnology-Environmental-aspects; Bioremediation-; Biotechnology-Economic-aspects

20. **NAL Call No.: TP248.195.G7B56--1992**

Biotechnology--friend or foe? : the social, ethical, political, religious and economic impacts : the report of the first annual meeting held on 18th November 1992 at the Royal Society, London.

Bennett, D. J.; BioIndustry Association (Great Britain). Meeting (1st : 1992 : London, E. London : BioIndustry Association, c1993. 61 p. : ill.,

Descriptors: Biotechnology-Great-Britain-Moral-and-ethical-aspects-Congresses; Biotechnology-industries-Great-Britain-Moral-and-ethical-aspects- Congresses

21. **NAL Call No.: S75.F87**
Biotechnology has worldwide implications.
Black, L. D. *Futures* v.12(1): p.28-32. (1994 Spring)
Descriptors: biotechnology-; agriculture-; productivity-; risk-; research-policy; safety-; decision-making; regulations-; plant-breeding; world-markets; developing-countries

22. **NAL Call No.: S494.5.B563G54-1992**
Biotechnology in agriculture : the next decade.
Glass, D. J.; Lindemann, J. Burlington, Mass. : Decision Resources, 1992. xiii, 176 p. : ill., "February 1992."
Descriptors: Agricultural-biotechnology-Forecasting; Plant-biotechnology-Forecasting; Animal-biotechnology-Forecasting; Biotechnology-industries- Forecasting

23. **NAL Call No.: aS21.D27S64**
Biotechnology: international affairs.
Dobert, R.; Saunders, J. *Spec-ref-briefs. Beltsville, Md. : Reference Section, National Agricultural Library, 1983-. .(94-11) 55 p.* (1994 July)
Updates SRB 91-12.
Descriptors: biotechnology-; international-comparisons; policy-; regulations-; economics-; technology-; technology-transfer; utilization-; risk-; information-services; bibliographies-

24. **NAL Call No.: QH442.G456**
Biotechnology market drivers for DNA sequencer and synthesizer research.
Fox, S.; Mimura, C. *Genet-Eng-News* v.13(6): p.8, 9, 24. (1993 Mar.)
Descriptors: dna-; chemical-reactions; nucleotides-; dna-sequencing; laboratory-equipment; automation-; applied-research

25. **NAL Call No.: RA784.N8**
Biotechnology of food: background information from the FDA.
Nutr-today v.29(4): p.19-20. (1994 Aug.)
Descriptors: food-biotechnology; genetic-engineering; tomatoes-; pectins-; degradation-; ripening-stage; firmness-; flavor-; food-quality; food-safety; food-policy; evaluation-; quality-standards; market-regulations; brand-name-products; public-agencies; case-studies; flavr-savr; food-and-drug-administration

26. **NAL Call No.: HD9999.B442D38--1993**
Biotechnology today : performance and prospects to 2000.
Dawson, J. London : Financial Times Business Information, c1993. vi, 103 p., Includes bibliographical references (p. 102-103).
Descriptors: Biotechnology-industries; Biotechnology-industries-Forecasting

27. **NAL Call No.: S494.5.B563A382**
Bringing plant biotechnology to the market--the next steps.
Miflin, B. J. *Agro-Ind-Hi-Tech* v.4(1): p.3-5. (1993 Jan.-1993 Feb.)
Descriptors: crops-; biotechnology-; product-development; regulations-; marketing-; Europe-; USA-

28. **NAL Call No.: QH442.G445**
Calgene seeks USDA OK to begin commercial production of genetically engineered tomato.
Genet-Technol-News v.12(8): p.14. (1992 Aug.)
Descriptors: lycopersicon-esculentum; genetic-engineering; usda-; regulations-; USA-; flavr-savr

29. **NAL Call No.: TP248.2.C76--1995**
Coming to life : biotechnology in African economic recovery.
Juma, C.; Mugabe, J.; Kameri Mbote, P.; African Centre for Technology Studies. Nairobi, Kenya : ACTS Press, African Centre for Technology Studies ; London, UK : Zed

Books, 1995. x, 192 p., Includes bibliographical references (p. 181-187) and index.
Descriptors: Biotechnology-Economic-aspects-Africa

30. **NAL Call No.: TP248.13.M65**
The commercial and agricultural applications of animal transgenesis.
Ward, K. A.; Nancarrow, C. D. *Mol-biotechnol* v.4(2): p.167-178. (1995 Oct.)
Includes references.
Descriptors: transgenic-animals; livestock-; gene-transfer; genetic-transformation; gene-expression; applications-; biochemistry-; literature-reviews

31. **NAL Call No.: SF995.W4**
Commercial DNA probe test kits for Mycoplasma gallisepticum and Mycoplasma synoviae: a field report.
Campbell, G.; Dam, B. v.; Tyrell, P. *Proc-West-Poult-Dis-Conf* (42nd): p.80-81. (1993)
Meeting held on Feb. 28-Mar. 2, 1993, Sacramento, California.
Descriptors: mycoplasma-gallisepticum; mycoplasma-synoviae; dna-probes

32. **NAL Call No.: TP248.2.B562**
Commercial exploitation of transgenics.
Smith, T. J. *Biotechnol-adv* v.12(4): p.679-686. (1994)
In the special issue: Biotechnology and industry: Present and future / edited by C.R. Barnett, J.S.G. Dooley, A.P. McHale, and P.G. McKenna.
Descriptors: transgenics-; genetic-engineering; utilization-; industrial-applications; reviews-

33. **NAL Call No.: QK728.P52-1992**
The commercial pathway for agricultural biotechnology.
Wochok, Z. S. *Plant biotechnology and development / editor, Peter M Gresshoff. Boca Raton : CRC Press* p.147-154 (1992)
Literature review.
Descriptors: agriculture-; biotechnology-; genetic-engineering; private-companies; production-economics; literature-reviews; commercialization-

34. **NAL Call No.: QH506.U34**
Commercial production and formulation of microbial biocontrol agents.
Baker, C. A.; Henis, J. M. S. *UCLA-Symp-Mol-Cell-Biol. New York, N.Y. : Wiley-Liss, Inc.* v.112p.333-344 (1990)
In the series analytic: New directions in biological control: Alternatives for suppressing agricultural pests and diseases / edited by R.R. Baker and P.E. Dunn. Proceedings of a UCLA Colloquium, January 20-27, 1989, Frisco, Colorado.
Descriptors: microbial-pesticides; bacterial-insecticides; fungal-antagonists; inoculum-; cell-culture; insect-control; plant-disease-control

Abstract: The purpose of this article is twofold. First is to present some of the economic considerations in the use of microbial cells as biocontrol agents. These include the fermentation and formulation costs as well as the importance of reducing application rates. Second is to discuss the requirements for the formulation of microbes and to introduce Monsanto's new encapsulation technology for microbial pesticides. This encapsulation technology is applicable to both phylloplane and rhizosphere delivery, has shown good field results and preliminary tests indicate the process results in good shelf-life.

35. **NAL Call No.: QR1.F4**
Commercial use of microbial inocula containing live genetically modified microorganisms (GEMMOs).
Harris, W. J. *F-E-M-S-Symp-Fed-Eur-Microbiol-Soc* (63): p.85-92. (1992)
In the series analytic: The release of genetically modified microorganisms--REGEM 2 / edited by D.E.S. Stewart-Tull and

M.Sussman. Paper presented at the "Symposium on the Release of Genetically Modified Microorganisms--REGEM 2," August 29-31, 1991, Nottingham, UK.
Descriptors: microorganisms-; genetic-engineering; inoculum-; introduced-species; economic-evaluation; production-economics; microbial- degradation; pollutants-; bioremediation-; polluted-soils; microbial-pesticides

36. **NAL Call No.: S494.5.B563C66--1993**
Commercialisation of biotechnologies for agriculture and aquaculture : status and constraints in India.
Srivastava, U. K.; Chandrasekhar, S. S. 1.; Indian Institute of Management, A. D. C. I. I. o. M. A. New Delhi : Oxford & IBH Pub. Co., 1993. xvii, 362 p., Papers presented at the National Workshop on Commercialisation of Biotechnologies in Agriculture and Aquaculture, jointly organized by the Indian Institute of Management, Ahmedabad, and Biotech Consortium India Ltd., New Delhi, April 23-24, 1992 at the Kasturbhai Lalbhai Management Development Centre, Indian Institute of Management, Ahmedabad.
Descriptors: Agricultural-biotechnology-India-Congresses; Aquaculture-India-Congresses

37. **NAL Call No.: HD9999.B443D443-1992**
Commercialisation of biotechnology in a developing economy : proceedings of a roundtable meeting held in Kuala Lumpur, Malaysia, 27- 29 January 1991.
Zakri, A. H. Bangi : Penerbit Universiti Kebangsaan Malaysia, 1992. 178 p. : ill., Includes bibliographical references.
Descriptors: Biotechnology-industries-Developong-countries-Congresses; Biotechnology-industries-Malaysia-Congresses; Biotechnology-Developing- countries-Industrial-applications-Congresses; Biotechnology-Malaysia-Industrial-applications-Congresses

38. **NAL Call No.: S494.5.B563N33**
Commercialization of genetically modified plants: progress towards the marketplace.
Fraley, R. T. *NABC-rep* (6): p.33-41. (1994)
In the series analytic: Agricultural biotechnology & the public good / edited by J.F. MacDonald. National Agricultural Biotechnology Council
Descriptors: transgenic-plants; genetic-engineering; biotechnology-; new-products; marketing-; regulations-

39. **NAL Call No.: 99.8-F7623**
Commercialization potential of somatic embryogenesis in black spruce tree improvement.
Adams, G. W.; Doiron, M. G.; Park, Y. S.; Bonga, J. M.; Charest, P. J. *For-chron* v.70(5): p.593-598. (1994 Sept.-1994 Oct.)
Includes references.
Descriptors: picea-mariana; somatic-embryogenesis; genetic-improvement; biotechnology-; clones-

Abstract: The somatic embryogenesis process was evaluated as a potential tool for operational vegetative propagation using individuals from families currently used in the J.D. Irving, Ltd. black spruce tree improvement program. Most families were responsive although the number of individuals within families capable of producing embryogenic tissue (ET) varied greatly (1-70%). Seventy-four percent of the ET clones produced mature embryos and most of these germinated. Greenhouse survival was initially low (11%) but improved in subsequent experiments to 45% as growing regimes were refined. Demonstration plantings of the resulting somatic plants were established at two sites in New Brunswick. A total of 206 clones were cryopreserved. The potential for integrating somatic embryogenesis techniques into tree improvement and stock production programs is discussed.

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40. **NAL Call No.: SB123.57.I55-1992**
Commercialization review process for plant varieties developed through biotechnology.
McCammon, S. L.; Medley, T. L.
Proceedings of the 2nd International Symposium on the Biosafety Results of Field Tests of Genetically Modified Plants and Microorganisms May 11-14, 1992, Goslar, Germany p.192-196 (1992)
edited by R Casper and J Landsmann.
Braunschweig, Germany : Biologische Bundesanstalt fur Land- und Forstwirtschaft.
Includes references.
Descriptors: plants-; transgenics-; environmental-impact; biotechnology-; product-development; legislation-; USA-

41. **NAL Call No.: SF995.W4**
A commercialized DNA probe based diagnostic testing system for mycoplasma gallisepticum in chickens and turkeys.
Ludtke, D.; Tyrrell, P.; Siefring, A.; Arnold, I. D. *Proc-West-Poult-Dis-Conf* (41st): p.74-75. (1992)
Meeting held on March 1-3, 1992, Sacramento, California.
Descriptors: mycoplasma-gallisepticum; dna-probes

42. **NAL Call No.: S494.5.B563N33**
Commercializing agricultural biotechnology.
Salquist, R. *NABC-rep* (3): p.132-137. (1991)
In the series analytic: Agricultural biotechnology at the crossroads: biological, social and institutional concerns.
Descriptors: biotechnology-; industrialization-; marketing-; agricultural-development

43. **NAL Call No.: TA166.T72**
Commercializing the products of plant biotechnology.
Mazur, B. J. *Trends-biotechnol* v.13(9): p.319-323. (1995 Sept.)
In the special issue: Plant-product and crop biotechnology.
Descriptors: crops-; plants-; genetic-engineering; recombinant-dna; companies-; economic-viability; plant-breeding; varieties-; agronomic- characteristics; commercialization-

44. **NAL Call No.: TP248.195.P47S37-1991**
Contribution of biotechnologies to sustainable rural development in developing countries: a case study in Thailand.
Bhumiratana, S. *Biotechnologies in perspective socio-economic implications for developing countries edited by Albert Sasson and Vivien Costarini. Paris : UNESCO* p.155-166 (1991)
Includes references.
Descriptors: biotechnology-; agriculture-; research-policy; economic-development; sustainability-; rural-development; agricultural-development; Thailand-

45. **NAL Call No.: QH442.G4522**
Council urges pre-market tests, labels for gene-altered foods.
Biotech-Dly. Washington, D.C. : King Pub. Group. v.1(77): p.4 (1992 Dec.)
Descriptors: food-biotechnology; regulations-; labeling-; risk-; us-food-and-drug-administration; council-for-responsible-genetics

46. **NAL Call No.: QH540.I84**
Designing commercially promising tropical timber species.
Palmer, J. R. *ITE-symp* (29): p.16-24. (1994)
In the series analytic: Tropical trees: the potential for domestication and the rebuilding of forest resources / edited by R.R.B. Leakey and A.C. Newton.
Descriptors: forest-trees; tropical-timbers; forest-resources; domestication-; tree-breeding; artificial-selection; harvest-index; plant-development; plant- physiology; molecular-genetics; ideotypes-; choice-of-species

47. **NAL Call No.: SB205.S7D47-1991**
Designing value-added soybeans for markets of the future.
Wilson, R. F. 1.; American Oil Chemists' Society. Meeting (81st : 1990 : Baltimore, Md. Champaign, Ill. : American Oil Chemists' Society, c1991. vi, 135 p. : ill., map, Based on presentations given at the 81st annual American Oil Chemists Society Meeting held in Baltimore, Md., Apr. 22-29, 1990.
Descriptors: Soybean-United-States-Germplasm-resources-Congresses; Soybean-Biotechnology-Economic-aspects-United-States-Congresses; Soybean-Composition-Congresses; Soybean-industry-Congresses

48. **NAL Call No.: SB123.57.I55-1992**
Development of legal requirements in France for commercialization of genetically modified plants.
Dattee, Y.; Roger, P. *Proceedings of the 2nd International Symposium on the Biosafety Results of Field Tests of Genetically Modified Plants and Microorganisms May 11-14, 1992, Goslar, Germany* p.185-191 (1992)
edited by R Casper and J Landsmann. Braunschweig, Germany : Biologische Bundesanstalt fur Land- und Forstwirtschaft.
Includes references.
Descriptors: plants-; genetic-engineering; regulations-; law-; france-

49. **NAL Call No.: R856.A4B5**
DNA Plant Technology reports results.
BioEng-News. San Francisco, Calif. : Deborah J. Mysiewicz. v.13(44): p.4 (1992 Nov.)
Descriptors: lycopersicon-esculentum; oils-; biotechnology-; product-development; marketing-; joint-ventures; fresh-world; intermountain-canola-co

50. **NAL Call No.: QH442.G4522**
DNA Plant Technology to sell 'Flavr Savr' tomato competitors.
Biotech-Dly. Washington, D.C. : King Pub. Group. v.1(13): p.1-2 (1992 Aug.)
Descriptors: lycopersicon-esculentum; genetic-engineering; somaclonal-variation; usda-; licenses-; marketing-; research-

51. **NAL Call No.: HC10.S63**
Economic and biological aspects of genetic diversity.
Gowdy, J. M. *Soc-nat-resour* v.6(1): p.1-16. (1993 Jan.-1993 Mar.)
Includes references.
Descriptors: genetic-resources; species-diversity; resource-management; economic-analysis; models-; environmental-policy; biological-activity; static-exchange; economic-models

52. **NAL Call No.: 44.8-J822**
Economic appraisal of the utilization of genetic markers in dairy cattle breeding.
Brascamp, E. W.; Arendonk, J. A. M. v.; Groen, A. F. *J-Dairy-Sci* v.76(4): p.1204-1213. (1993 Apr.)
Includes references.
Descriptors: dairy-cattle; genetic-markers; breeding-programs; economic-evaluation; semen-; milk-yield; ai-bulls; progeny-

Abstract: Returns from the utilization of genetic markers in breeding programs have been computed in two ways. In the first approach, returns accrue from additionally improved milk yield that was due to marker utilization in selection. In the second approach, changes in returns from semen sales for a breeding organization operating in a competitive market are determined. The genetic effect of markers is taken to result from preselection of young bulls. Based on the literature, the increase in mean breeding value of young bulls as a result of marker-based preselection was taken to range from .15 to .45 additive genetic standard deviation. When additive genetic standard deviation is assumed at $67 with an interest rate of 5% and a time horizon of 25 yr, cumulative discounted returns from 1 yr of marker utilization ranged from $7 to $21 per cow for progeny testing and from

$20 to $60 for an open nucleus. Additional discounted financial returns from increased semen sales range from $5.0 million to $16.2 million for a situation in which an AI firm utilizes markers during 20 yr and competitors do not follow. Lower costs are expected as technology improves, and improved statistical analysis should reduce the number of typings required. Thus, utilization of markers is expected to become financially justified.

53. **NAL Call No.: SF111.W45--1994**
Economic aspects of animal breeding.
Weller, J. I. London ; New York : Chapman & Hall, 1994. 244 p. : ill., Includes bibliographical references (p. [226]-236) and index.
Descriptors: Livestock-productivity-Economic-aspects; Animal-breeding-Economic-aspects; Animal-genetics; Livestock-Economic-aspects

54. **NAL Call No.: S494.5.B563N33**
Economic aspects of biopesticides.
Reichelderfer, K. H. *NABC-rep* (1): p.82-92. (1989)
In the series analytic: Biotechnology and sustainable agriculture : Policy alternatives / edited by J.F. McDonald. Paper presented at the first annual National Agricultural Biotechnology Council meeting, May 22-24, 1989.
Descriptors: pest-control; biological-control; biotechnology-; economic-evaluation; feasibility-; social-policy; research-

55. **NAL Call No.: S494.5.B563N33**
Economic aspects of disease control in animals.
Kliebenstein, J. B.; Hallan, L. A. *NABC-rep* (1): p.157-170. (1989)
In the series analytic: Biotechnology and sustainable agriculture : Policy alternatives / edited by J.F. McDonald. Paper presented at the first annual National Agricultural Biotechnology Council meeting, May 22-24, 1989.
Descriptors: animal-health; disease-control; biotechnology-; economic-evaluation; cost-benefit-analysis; social-impact; environmental-impact; sustainability-

56. **NAL Call No.: S494.5.B563N33**
Economic assessment of agricultural biotechnology.
Offutt, S. *NABC-rep* (3): p.147-152. (1991)
In the series analytic: Agricultural biotechnology at the crossroads: biological, social and institutional concerns.
Descriptors: biotechnology-; economic-impact; agricultural-development; agricultural-policy; USA-

57. **NAL Call No.: 23-Au792**
An economic assessment of rice breeding in New South Wales.
Brennan, J. P.; Lewin, L. G.; Marshall, G. R.; Reinke, R. F. *Aust-j-exp-agric* v.34 (7): p.889-896. (1994)
Special Issue: Temperate Rice: Achievements and Potential.
Descriptors: oryza-sativa; varieties-; genetic-improvement; plant-breeding; economic-analysis; crop-yield; crop-quality

58. **NAL Call No.: aSD399.5.S86-1971**
An economic evaluation of tree improvement on the southern National Forests : the expanding influence of tree improvement.
Swofford, T. F.; Swofford, T. F. [Atlanta, Ga.?] : Southern Region, 1971. 53 p. : ill., Cover title.
Descriptors: Pine-Breeding-Economic-aspects-Southern-States; Forest-genetics-Economic-aspects-Southern-States

59. **NAL Call No.: SF396.9.S84**
The economic impact of genetic improvement.
McLaren, D. G.; Schinckel, A. P. *Swine-genet. West Lafayette, IN : Purdue University*

Cooperative Extension Service v.1p.5 (1990 Mar.)
Descriptors: pigs-; genetic-improvement; meat-and-livestock-industry; economic-impact; crossbreeding-; selection-; performance-testing; productivity-; USA-

60. **NAL Call No.: S494.5.B563C87**
Economic importance of breeding for disease resistance.
Hogenboom, N. G. *Curr-plant-sci-biotechnol-agric. Dordrecht : Kluwer Academic Publishers.* v.18p.5-9 (1993)
In the series analytic: Durability of disease resistance / edited by T. Jacobs and J.E. Parlevliet. Proceedings of an international symposium held February 24-28, 1992, Wageningen, Netherlands.
Descriptors: crops-; plant-breeding; disease-resistance; genetic-resistance; literature-reviews

61. **NAL Call No.: S539.5.J68**
Economic models and breeding strategies for soybean improvement.
Leffel, R. C. *J-prod-agric* v.3(4): p.582-586. (1990 Oct.-1990 Dec.)
Includes references.
Descriptors: glycine-max; genetic-improvement; breeding-methods; selection-criteria; soy-protein; protein-content; seeds-; soybean-oil; economic- evaluation; valuation-; mathematical-models; USA-

Abstract: Increasing concern about seed protein and oil in U.S. soybeans (Glycine max [L.] Merr.) by buyers, processors, and farmers dictate that soybean breeders give increased emphasis to chemical composition of soybean germplasm and cultivars. The evolutionary path of soybean improvement has been one of increasing seed yield and oil and decreasing seed protein. Breeding strategies to increase seed protein of U.S. soybeans have been proposed, including the adoption of minimal levels of protein for new cultivar releases. The task is difficult, however, because soybean seed protein and oil are highly negatively correlated and seed yield is usually negatively correlated with protein. Models have been proposed to determine the economic value of soybeans on the basis of seed oil and protein to aid in development of more equitable end- user value. The objectives of this paper are: (i) to compare three models proposed for estimating the economic value of soybeans; (ii) to specify the limitations of economic models as soybean selection and cultivar evaluation indices; and (iii) to evaluate proposed breeding strategies to increase soybean seed protein of U.S. soybeans. The models were compared by using a data set provided by the authors of one of the models and an additional hypothetical data set of soybean genotypes ranging from high oil-low protein to low oil-high protein. The three models gave similar dollar values per bushel and identical rankings of economic value. All three models are adequate for selection and cultivar evaluation indices, but require an assumption of the future soybean oil:44% protein soybean meal price ratio. The National Oilseed Processors Association's (NOPA) Standard Specifications for 44%. premiums for protein in excess of specifications. The economic model used must provide a proportionate premium for meal protein above NOPA's Standard Specifications for 44% protein soybean meal to justify the development of high protein soybeans. Adopting minimum levels of seed protein is not a desirable breeding strategy to improve the competitiveness of U.S. soybeans. If a minimum level of protein has to be imposed in soybean improvement, the minimum level should be on the meal protein rather than on seed protein.

62. **NAL Call No.: Q225.I7**
The economic realities of biodiversity.
Reid, W. V. *Issues-sci-technol* v.10(2): p.48-55. (1993 Winter-1994 Winter)
Includes references.
Descriptors: biotechnology-; diversity-; sustainability-; genetic-resources; rural-development; medicinal-plants; economic-analysis

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63. NAL Call No.: **QK495.G74B34**
Economic trait loci (quantitative trait loci-QTL) analyses progress report. North American Barley Genome Mapping Project (NABGMP).
Hayes, P. M. *Barley-Genet-Newsl. Fargo, ND : Department of Crop and Weed Sciences, North Dakota State University* v.21p.30-31 (1992 Dec.)
Descriptors: hordeum-vulgare; quantitative-genetics; loci-; quantitative-traits; agronomic-characteristics; research-projects; genetic-markers

64. NAL Call No.: **SB191.W5N672-1994**
The effects of Plant Variety Protection Law on the competitiveness of the U.S. wheat industry.
Edwards, I. B. *Proceedings of the North American Wheat Workers Workshop, March 7-9, 1994, Kansas City, Missouri North American Wheat Workers Workshop. [United States : s.n., 1995].* p.54-70
Includes references.
Descriptors: triticum-aestivum; triticum-; breeders'-rights; plant-breeding; legislation-; germplasm-; germplasm-releases; genetic-resources; seed- industry; market-competition; competitive-ability; international-agreements; USA-; plant-variety-protection-act; international-union-for-protection-of-new-varieties-of-plant

65. NAL Call No.: **S494.5.B563G35--1993**
Employment and income effects of biotechnology in Latin America : a speculative assessment.
Gallardi, R. M. A. A.; International Labour Office. Geneva : International Labour Office, 1993. 64 p., Includes bibliographical references (p. 62-64).
Descriptors: Agricultural-biotechnology-Economic-aspects-Latin-America; Agriculture-Economic-aspects-Latin-America; Latin-America-Economic- conditions-1982-

66. NAL Call No.: **QD1.A45**
Encouraging research, development, and commercialization in agricultural biotechnology.
Young, A. L.; Jones, D. D.; Staton, J. C. *ACS-symp-ser* (551): p.497-508. (1994)
In the series analytic: Natural and engineered pest management agents / edited by P.A. Hedin, J.J. Menn, and R.M. Hollingworth.
Descriptors: biotechnology-; agriculture-; usda-; technology-transfer; regulations-; property-protection; patents-; consumer-education

Abstract: The applications of biotechnology to agriculture are growing at a significant rate throughout the world. With the application of any new technology, there often arise concerns about possible economic and societal effects. In the case of agricultural biotechnology, these concerns

67. NAL Call No.: **QH442.G456**
Enzymology advances offer economical and environmentally safe ways to make paper.
Wick, C. B. *Genet-eng-news. New York : M. A. Liebert, Inc.* v.14(19): p.10-11 (1994 Nov.)
Descriptors: pulp-and-paper-industry; biotechnology-; triacylglycerol-lipase; o-glycoside-hydrolases; cellulase-; beta-glucanase-; industrial- applications; xylanase-; hemicellulase-

68. NAL Call No.: **S539.5.J68**
Estimated domestic producer and end user benefits from genetically modifying U.S. soybeans.
McVey, M. J.; Pautsch, G. R.; Baumel, C. P. *J-prod-agric* v.8(2): p.209-214. (1995 Apr.-1995 June)
Includes references.
Descriptors: glycine-max; genetic-engineering; genetic-improvement; modification-; economic-evaluation; supply-balance; value-added; models-

Abstract: Recent losses in the U.S. soybean (Glycine max (L.) Merr.] market share have motivated soybean producers to seek alternative methods of increasing the demand for U.S. soybeans. Organizations funded by U.S. soybean producers are at the forefront of this issue, struggling with the dilemma of determining which options to pursue in order to generate the greatest returns for soybean producers. Options include genetically modifying the soybean to better fit the needs of end users, increasing per acre yields, and reducing the costs of production. A previous study estimated the gross values of 30 alternative modifications of the soybean. The purpose of this paper is to provide estimates of the expected net benefits accruing to U.S. soybean producers and end users from five genetic modifications. Producer and consumer surplus models were used to estimate the expected net benefits to U.S. soybean producers and end users. These results will be useful to producer organizations in allocating funds for genetic modification research. Producer welfare is found to increase with increasing demand elasticities. The most favorable scenario for producer organizations is where the elasticity of demand is high relative to the elasticity of supply, the added production costs or yield loss is zero, the shifts in total demand for U.S. soybeans are large, and the probability of research success is high. Producer organizations cannot simply compare the modifications based on their per bushel added values. Investing in the three modifications which had the highest per bushel added values resulted in expected producer net benefits $472.8 million lower than investing in research on the three. in negative benefits for soybean producers. Very small or no yield reductions or very large per bushel values from the modification are needed to produce positive net values to producers.

69. **NAL Call No.: SF601.C24**
Evaluation of conventional and radiometric fecal culture and a commercial DNA probe for diagnosis of Mycobacterium paratuberculosis infections in cattle.
Sockett, D. C.; Carr, D. J.; Collins, M. T.
Can-J-Vet-Res-Rev-Rev-Can-Rech-Vet v.56(2): p.148-153. (1992 Apr.)
Includes references.
Descriptors: dairy-cows; mycobacterium-paratuberculosis; diagnostic-techniques; dna-probes; costs-

70. **NAL Call No.: SB249.N6**
Evaluation of treatment thresholds for control of bollworms and tobacco budworms in transgenic BT cotton in South Carolina.
DuRant, J. A. *Proc-Beltwide-Cotton-Conf. Memphis, Tenn. : National Cotton Council of America* v.2p.1073-1075 (1994)
Meeting held January 5-8, 1994, San Diego, California.
Descriptors: gossypium-; transgenic-plants; lines-; genotypes-; bacillus-thuringiensis; endotoxins-; insect-control; genetic-control; heliothis-virescens; helicoverpa-zea; efficacy-; economic-thresholds; south-carolina

71. **NAL Call No.: SB123.P535**
The experimental and commercial release of transgenic crop plants.
Dale, P. J.; Irwin, J. A.; Scheffler, J. A.
Plant-Breed-Z-Pflanzenzucht v.111(1): p.1-22. (1993 Aug.)
Literature review.
Descriptors: crops-; transgenic-plants; genetic-transformation; recombinant-dna; gene-transfer; field-experimentation; introduced-species; plant- introduction; environmental-impact; literature-reviews

72. **NAL Call No.: HD9000.1.J6**
Farmer acceptance of biotechnology and marketing strategies: implications for agribusiness from surveys in western Canada.
Klein, K. K.; Hobbs, J. E.; Kerr, W. A. *J-int-food-agribus-mark* v.6(1): p.71-88. (1994)
Includes references.

Descriptors: biotechnology-; farmers'-attitudes; growth-promoters; constraints-; agribusiness-; innovation-adoption; farm-surveys; information-services; extension-agents; market-planning; Canada-; socio-economic-constraints

73. **NAL Call No.: QH442.G456**
FDA OKs Calgene's Flavr Savr tomato for marketing in supermarkets in the U.S.
Pfeiffer, N. *Genet-eng-news. New York : M. A. Liebert, Inc.* v.14(11): p.1, 31 (1994 June)
Descriptors: tomatoes-; genetic-engineering; food-safety; recombinant-dna; public-agencies; regulations-; food-and-drug-administration

74. **NAL Call No.: S494.5.S86B56-1994**
The field testing and commercialization of genetically modified plants: a review of worldwide data (1986 to 1993/94).
Krattiger, A. F. *Biosafety for sustainable agriculture sharing biotechnology regulatory experiences of the western hemisphere* / p.247-266. (1994)
Includes references.
Descriptors: transgenic-plants; field-experimentation; product-development; innovation-adoption; developing-countries; developed-countries

75. **NAL Call No.: A00035**
Flavr Savr tomatoes cleared for approval; will be commercially available in 1993.
Biotechnol-News. Summit, N.J. : CTB International Pub. Co. v.12(26): p.3 (1992 Oct.)
Descriptors: lycopersicon-esculentum; genetic-engineering; usda-; regulations-; USA-; us-food-and-drug-administration

76. **NAL Call No.: TA166.T72**
Floriculture: genetic engineering of commercial traits.
Mol, J. N. M.; Holton, T. A.; Koes, R. E. *Trends-biotechnol* v.13(9): p.350-355. (1995 Sept.)
In the special issue: Plant-product and crop biotechnology.
Descriptors: ornamental-plants; cut-flowers; flowers-; transgenic-plants; genetic-engineering; ornamental-value; color-; molecular-genetics; plant- breeding; literature-reviews; molecular-breeding

Abstract: 'Classical' flower breeding by continuous crossing and selection has its limitations; for example, no one has succeeded in breeding a blue rose or an orange petunia. However, the ability to introduce individual genes into plants (molecular breeding) has made the development of plant species with novel aesthetic properties possible. This review summarizes recent developments in the molecular breeding of flowers, indicates novel traits and strategies, and discusses some of the problems that must be tackled before transgenic ornamental plants can reach the marketplace.

77. **NAL Call No.: 389.8-J824**
Food and agricultural biotechnology: economic implications.
Hayenga, M. L. *Am-j-clin-nutr* v.58(2S): p.313S-316S. (1993 Aug.)
In the special issue: Impact of biotechnology on the food supply / edited by D.M. Bier. Proceedings of a symposium held April 30-May 1, 1990, Washington, DC.
Descriptors: food-biotechnology; consumer-information; food-research; product-development; genetic-engineering; food-processing; agribusiness-; sales-promotion

Abstract: The economic issues and implications associated with products emerging from food and agricultural biotechnology in the next decade are considered. Consumers are likely to be primary beneficiaries, but many have significant misgivings and little information about new food products from biotechnology. Clinical nutritionists have a significant role to play in benefit-risk analysis and public information programs.

78. **NAL Call No.: 389.9-C1632**
Food biotechnology: Panacea or Pandora's box.
Ryan Harshman, M. *J-Can-Diet-Assoc* v.56(3): p.137-139. (1995 Fall)
Includes references.
Descriptors: food-biotechnology; food-marketing; consumer-information; food-and-nutrition-controversies; economic-impact; ethics-

Abstract: Controversy surrounding biotechnology has reached the food marketplace. Dietitians who are trusted sources of advice for the consumer must increase their awareness of this controversial topic. Dieticians must be informed about the science of biotechnology and the values and beliefs of those who will be affected by biotechnology. The key issues of ethics, economics and sustainability are discussed in this commentary with respect to the impact of biotechnology. Important questions that dietitians should consider summarize each section.

79. **NAL Call No.: SB599.C8**
Forecasting future developments in crop protection.
Gotsch, N.; Rieder, P. *Crop-Prot* v.9(2): p.83-89. (1990 Apr.)
Includes references.
Descriptors: plant-protection; crops-; research-; arable-farming; biological-control; chemical-control; plant-breeding; biotechnology-; pest-control; disease-control; growth-regulators; agricultural-economics; feasibility-; forecasting-; surveys-

80. **NAL Call No.: S494.5.B563N33**
The fourth criterion: social and economic impacts of agricultural biotechnology.
Lacy, W. B.; Busch, L. *NABC-rep* (3): p.153-168. (1991)
In the series analytic: Agricultural biotechnology at the crossroads: biological, social and institutional concerns.
Descriptors: biotechnology-; social-impact; economic-impact; food-supply

81. **NAL Call No.: QH75.V63--1994**
Genes for sale : privatization as a conservation policy.
Vogel, J. H. New York : Oxford University Press, 1994. xii, 155 p. : ill., Includes bibliographical references and index.
Descriptors: Germplasm-resources-Economic-aspects; Biological-diversity-conservation-Economic-aspects; Privatization-

82. **NAL Call No.: SF83.U6U6--no.118**
Genetic mapping of economic trait loci in the pig.
Mariani, P. Uppsala : Swedish University of Agricultural Sciences, Dept. of Animal Breeding and Genetics 1995. 1 v. (various pagings) : ill., "Licentiate thesis."

83. **NAL Call No.: SB317.5.H68**
Global horticulture and the quest for seed varieties.
Korn, F. *HortTechnology* v.4(2): p.123-124. (1994 Apr.-1994 June)
Paper presented at the "Colloquium on Marketing Ho rticultural Crops Globally," August 4, 1992, Honolulu, Hawaii.
Descriptors: horticultural-crops; world-markets; international-trade; cultivars-; genetic-resources; germplasm-; seeds-

84. **NAL Call No.: 286.81-F322**
Growth promotants first test of adapting to biotechnology.
Buhr, B. *Feedstuffs* v.65(20): p.26-28, 30, 32. (1993 May)
Includes references.
Descriptors: cattle-; pigs-; meat-and-livestock-industry; growth-promoters; innovation-

adoption; biotechnology-; economic-impact; USA-

85. **NAL Call No.: TP248.6.H36--1992**
Handbook for the implementation of directive 90/219/EEC on the contained use of genetically modified microorganisms.
Commission of the European Communities. Directorate General Environment, N. S. a. C. P. [Brussels?] : Commission of the European Communities, Directorate General XI, Environment, Nuclear Safety and Civil Protection, [1992-] v., Cover title. vol. 1.
Descriptors: Recombinant-microorganisms-European-Economic-Community-countries; Microbial-genetic-engineering-European-Economic- Community-countries

86. **NAL Call No.: QH442.G456**
Harnessing ag resources ansd biotechnology for tech transfer and creation of business.
Zeikus, J. G. *Genet-eng-news. New York : M. A. Liebert, Inc.* v.15(1): p.4, 5, 48 (1995 Jan.)
Descriptors: agriculture-; biotechnology-; genetic-engineering; technology-; technology-transfer; businesses-; private-companies; economic- development; commercialization-

87. **NAL Call No.: TP248.2.K56--1993**
The human body shop : the engineering and marketing of life. 1st ed.
Kimbrell, A. [San Francisco, Calif.] : HarperSanFrancisco, c1993. x, 348 p., Includes bibliographical references (p. 307-336) and index.
Descriptors: Biotechnology-Moral-and-ethical-aspects

88. **NAL Call No.: QH442.G456**
Human genome project spins off array of novel methods and technologies.
Pramik, M. J. *Genet-eng-news. New York : M. A. Liebert, Inc.* v.13(6): p.6 (1993 Sept.)
Descriptors: genomes-; man-; gene-mapping; biochemical-techniques; dna-sequencing; private-companies; economic-development; research-projects; technology-

89. **NAL Call No.: 450-Eu6**
Identifying and mapping genes of economic significance.
Weeden, N. F.; Timmerman, G. M.; Lu, J. *Euphytica* v.73(1/2): p.191-198. (1993)
Paper presented at the "Second International Food Legume Research Conference" held April 12-16, 1992, Cairo, Egypt.
Descriptors: crops-; legumes-; grain-legumes; leguminosae-; genes-; quantitative-traits; agronomic-characteristics; identification-; gene-mapping; genetic-markers; restriction-fragment-length-polymorphism; artificial-selection; gene-mapping; chromosome-maps; random-amplified-polymorphic-dna; marker-assisted-selection; linkage-maps

90. **NAL Call No.: S494.5.B563C87**
Identifying and mapping genes of economic significance.
Weeden, N. F.; Timmerman, G. M.; Lu, J. *Curr-plant-sci-biotechnol-agric. Dordrecht : Kluwer Academic Publishers.* v.19p.726-737 (1994)
In the series analytic: Expanding the production and use of cool season food legumes / edited by F.J. Muehlbauer and W.J. Kaiser. Proceedings of the second international food legume research conference, April 12-16, 1992, Cairo, Egypt.
Descriptors: pisum-sativum; lens-culinaris; cicer-arietinum; vicia-faba; gene-mapping; genetic-markers; marker-genes; molecular-genetics

91. **NAL Call No.: TP360.B562**
Identity-preserved edible vegetable oils start moving from lab to market: US sales could approach $4 billion by 2000.
Ind-Bioprocess v.14(7): p.4-5. (1992 July)
Descriptors: plant-oils; market-research; biotechnology-

92. **NAL Call No.: KF26.A351-1992g**
Implementation of the Alternative Agricultural Research and Commercialization (AARC) Act of 1990 : hearing before the Subcommittee on Agricultural Research and General Legislation of the Committee on Agriculture, Nutrition, and Forestry, United States Senate, One Hundred Second Congress, second session ... focusing on the current activities of the AARC Board and future activities, September 29, 1992.
United States. Congress. Senate. Committee on Agriculture, N. a. F. S. o. A. R. a. G. L.
Washington : U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1993. iii, 74 p., Distributed to some depository libraries in microfiche.
Descriptors: Agricultural-biotechnology-Research-Government-policy-United-States; Agricultural-innovations-Research-Government-policy-United- States; Plant-products-Research-Government-policy-United-States; Agriculture-Research-Government-policy-United-States; New-products- Research-Government-policy-United-States

93. **NAL Call No.: HB1.A2N3--no.4653**
Intellectual capital and the birth of U.S. biotechnology enterprises.
Zucker, L. G.; Darby, M. R.; Brewer, M. B. 1.; National Bureau of Economic Research.
Cambridge, MA : National Bureau of Economic Research, [1994] 60, [6] p. : ill., "February 1994."
Descriptors: Biotechnology-industries-United-States-Econometric-models; Scientists-Intelligence-levels-Economic-aspects

94. **NAL Call No.: HB1.A2N3--no.4946**
Intellectual capital and the firm : the technology of geographically localized knowledge spillovers.
Zucker, L. G.; Darby, M. R.; Armstrong, J.; National Bureau of Economic Research.
Cambridge, MA : National Bureau of Economic Research, c1994. 58, [1] p. : map, "December 1994."
Descriptors: Scientists-Intelligence-levels-Economic-aspects; Biotechnology-industries-United-States-Econometric-models; New-products-United- States-Econometric-models

95. **NAL Call No.: QR1.E9**
An interlaboratory comparison of the performance of ethanol-producing micro-organisms in a xylose-rich acid hydrolysate.
Hahn Hagerdal, B.; Jeppsson, H.; Olsson, L.; Mohagheghi, A. *Appl-microbiol-biotechnol* v.41(1): p.62-72. (1994 Mar.)
Includes references.
Descriptors: lignocellulose-; maize-cobs; hydrolysates-; xylose-; fuels-; renewable-resources; ethanol-production; fermentation-; ethanol-; yields-; productivity-; metabolic-detoxification; escherichia-coli; saccharomyces-cerevisiae; pichia-stipitis; fusarium-oxysporum; recombinant-dna; economic-analysis; lignocellulose-hydrolysates

Abstract: A xylose-rich, dilute-acid-pretreated corn-cob hydrolysate was fermented by Escherichia coli ATCC 11303, recombinant (rec) E. coli B (pLOI 297 and KO11), Pichia stipitis (CBS 5773, 6054 and R), Saccharomyces cerevisiae isolate 3 in combination with xylose isomerase, rec S. cerevisiae (TJ1, H550 and H477) and Fusarium oxysporum VTT-D-80134 in an interlaboratory comparison. The micro-organisms were studied according to three different options: (A) fermentation under consistent conditions, (B) fermentation under optimal conditions for the organism, and (C) fermentation under optimal conditions for the organism with detoxification of the hydrolysate. The highest yields of ethanol, 0.24 g/g (A), 0.36 g/g (B) and 0.54 g/g (C), were obtained from rec E. coli B, KO11. P. stipitis and F. oxysporum were sensitive to the inhibitors present in the hydrolysate and produced a maximum yield of 0.34 g/g (C) and 0.04 g/g (B), respectively. The analysis of the corn-cob hydrolysate and aspects of process economy of the different

fermentation options (pH, sterilization, nutrient supplementation. adaptation, detoxification) are discussed.

96. **NAL Call No.: TP248.14.E97--1991**
Issues in the commercialization of biotechnology : proceedings of the Expert Group Meeting on the Commercialization of Biotechnology, Vienna, Austria, 28 October-1 November 1991.
Expert Group Meeting on the Commercialization of Biotechnology (1991 : Vienna, A. Vienna : UNIDO, 1993. vi, 240 p. : ill., "UNIDO publication: UNIDO.93.1.E"--T.p. verso.
Descriptors: Biotechnology-Congresses; Technology-transfer-Congresses

97. **NAL Call No.: Q320.A4**
Major engineering breakthrough in wheat: road to commercial improvement paved.
AgBiotechnol-News v.9(3): p.1, 9. (1992 May-1992 June)
Descriptors: triticum-aestivum; genetic-engineering; drought-resistance; pest-resistance; research-support; USA-; university-of-florida; monsanto-

98. **NAL Call No.: 44.8-J822**
Market share for semen and cloned embryos in dairy herds.
Boer, I. J. M. d.; Arendonk, J. A. M. v. *J-dairy-sci* v.77(12): p.3691-3703. (1994 Dec.)
Includes references.
Descriptors: dairy-cows; embryos-; clones-; artificial-insemination; nucleus-scheme; supply-balance; selection-responses; mathematical-models; genetic-variance; production-costs; genetic-variation

Abstract: Use of cloned embryos from desirable genotypes (commercial clone lines) enables faster dissemination of superior genetics to dairy producers. Under optimal purchasing strategies of milk producers, the annual proportion of replacement cows from commercial clone lines indicates the market share of cloned embryos compared with semen. Relevant factors affecting this market share were studied. To produce the next generation of commercial cows, the nucleus provided semen from the best sire and cloned embryos from the best female genotype, were selected for a trait associated with lactation. A commercial cow was inseminated if net returns from her expected offspring were higher than net returns from an expected contemporary clone. Net returns equaled net milk returns minus the costs required to breed an expected offspring. If not inseminated, a cow could be used for implantation of a cloned embryo. An increase in the genetic difference between cloned embryos and semen or in the annual additive genetic response achieved in the nucleus increased market share of cloned embryos. Market share decreased as the difference in costs required to breed an offspring from AI or implantation increased. In addition, market share was affected by characteristics of the commercial cow population before the introduction of clones.

99. **NAL Call No.: SF140.B54A55**
Mitochondrial DNA polymorphism and determination of effects on economic traits in dairy cattle.
Ron, M.; Genis, I.; Ezra, E.; Yoffe, O.; Weller, J. I.; Shani, M. *Anim-Biotechnol* v.3(2): p.201-219. (1992)
Includes references.
Descriptors: dairy-cattle; restriction-fragment-length-polymorphism

100. **NAL Call No.: QH547.I55**
Modelling the field efficacy of a genetically engineered vaccine against the cattle tick, Boophilus microplus.
Floyd, R. B.; Sutherst, R. W.; Hungerford, J. *Int-j-parasitol* v.25(3): p.285-291. (1995 Mar.)
Includes references.
Descriptors: cattle-; boophilus-microplus; recombinant-vaccines; vaccination-; pest-control; population-dynamics; computer-

simulation; simulation- models; tick-infestations; cost-benefit-analysis

Abstract: The cattle tick Boophilus microplus Canestrini (Ixodidae) is an obligate parasite of bovines in the tropics. Vaccination against the tick, using concealed antigens, has previously been demonstrated to give partial protection which can vary under field conditions. In this paper computer modelling is used to evaluate the potential impact of the vaccine on populations of ticks on grazing cattle. The degree and duration of protection required to maintain tick numbers at acceptable levels is investigated. Results of the computer analyses have been used to guide the further development of the vaccine and to support an application for registration of the vaccine for control of the cattle tick in Australia. They demonstrate the contribution that modelling can make in evaluating the novel impacts that new technologies may have on the host-parasite relationship in different ecological environments.

101. **NAL Call No.: SF492.B34-1993**
Molecular genetic analysis of traits of economic importance in poultry.
Bacon, L. D. 1.; Soller, M.; Beckmann, J. S.; United States Israel Binational Agricultural Research and Development Fund. Bet Dagan, Israel : BARD, 1993. 81 p. : ill., Final report.
Descriptors: Chickens-Genetics; Gene-mapping; molecular-sequence-data

102. **NAL Call No.: QH442.G445**
Monsanto genetically engineers plants to boost starch.
Genet-Technol-News v.12(11): p.1-2. (1992 Nov.)
Descriptors: solanum-tuberosum; arabidopsis-thaliana; agrobacterium-tumefaciens; escherichia-coli; starch-crops; ethanol-production; economic- impact

103. **NAL Call No.: TP248.2.A77**
Monsanto's starch developments.
Appl-Genet-News v.13(4): p.13. (1992 Nov.)
Descriptors: solanum-tuberosum; zea-mays; genetic-engineering; starch-crops; ethanol-production; economic-impact; USA-

104. **NAL Call No.: 280.8-J822**
Multimarket exploitation: the case of biotechnology and chemicals.
Just, R. E.; Hueth, D. L. *Am-j-agric-econ* v.75(4): p.936-945. (1993 Nov.)
Includes references.
Descriptors: biotechnology-; agricultural-chemicals; economies-of-scale; production-; social-impact; demand-; markets-; price-elasticities; mathematical-models; economies-of-scope

Abstract: Biotechnology enables rapid development of products with specific characteristics. We show that those who control the direction of biotechnology development influence the resulting industry structure. Through multimarket exploitation, chemical companies develop biotechnology that increases dependence on chemicals, whereas nonchemical companies tend toward development of biotechnology that substitutes for chemicals. Chemical companies tend to both underinvest and underproduce. Conversely, firms without vested chemical interests tend to overinvest and overproduce-even with monopoly-enabling patents. Results show how the consequent industry structure can be affected by choice of agricultural policy.

105. **NAL Call No.: Videocassette--no.1980**
National Biotechnology Summit : town meeting : toward a scientifically educated America : how can America prepare for the biotechnology revolution. Town meeting.
BioConferences International, I. Bethesda, MD : BioConferences International, c1993. 1 videocassette (ca. 87 min.) : sd., col.. "S03.".

Descriptors: Biotechnology-Study-and-teaching-Congresses/ Biotechnology-Forecasting-Congresses

Abstract: Six speakers discuss the role of education in biotechnology. Topics covered include how to communicate with the public about biotechnology, the education programs offered by the North Carolina Biotechnology Center, and the future of medical research and agricultural biotechnology.

106. **NAL Call No.: QH442.G456**
New biotechnologies set to impact industrial food preservative market.
Stroh, W. H. *Genet-eng-news* v.13(21): p.8. (1993 Dec.)
Descriptors: food-preservatives; food-biotechnology; economic-analysis

107. **NAL Call No.: Videocassette--no.2177**
The new creation : genetic engineering biotechnology : ethical (animal welfare), economic and environmental concerns. Genetic engineering biotechnology : ethical (animal welfare), economic and environmental concerns.
Humane Society of the United States. Rockville, Md. : Video on Location [distributor, 1993?] 1 videocassette (25 min.) : sd., col. 1 article ([5] p.)..
Descriptors: Animal-genetic-engineering-Environmental-aspects/ Animal-genetic-engineering-Moral-and-ethical-aspects/ Biotechnology- Environmental-aspects

Abstract: Discusses the ethical, environmental and animal welfare implications of genetic engineering.

108. **NAL Call No.: 1-Ag84Y-1992**
New crops, new uses, new markets : industrial and commercial products from U.S. agriculture. Industrial and commercial products from U.S. agriculture.
United States. Dept. of Agriculture. Office of Publishing and Visual Communication. Washington, DC : Office of Publishing and Visual Communication, U.S. Dept. of Agriculture : For sale by the Supt. of Docs., U.S. G.P.O., [1992?] xviii, 302 p. : ill., Shipping list no.; 92-0710-P.
Descriptors: Plant-biotechnology-United-States; Crops-Research-United-States; Crops-United-States-Industrial-applications; Crops-United-States- Marketing

109. **NAL Call No.: 100-IL64**
A new era in crop production.
Holt, D. A. *Ill-Res-Ill-Agric-Exp-Stn* v.25(2): p.6-9. (1983 Spring)
Descriptors: crop-production; hybrids-; plant-density; genetic-engineering; yield-forecasting

110. **NAL Call No.: QH442.G456**
New gene boutiques spurred by HGP promise to represent biotechnology's second coming.
Lewis, R. *Genet-eng-news. New York : M. A. Liebert, Inc.* v.13(6): p.1, 8, 29 (1993 Sept.)
Descriptors: genomes-; man-; gene-mapping; biochemical-techniques; dna-sequencing; private-companies; economic-development; research-projects; technology-; human-genome-project

111. **NAL Call No.: QH442.G456**
No commercial gene-altered crop approvals until fed gov't assesses the ecological risks.
Rissler, J.; Mellon, M. *Genet-eng-news* v.14(3): p.4, 12. (1994 Feb.)
Descriptors: crops-; transgenic-plants; environmental-impact; federal-government; regulations-; safety-; risk-; USA-

112. **NAL Call No.: KF27.M447-1992g**
Opportunities for growth in marine aquaculture and marine biotechnology industries : hearing before the Subcommittee on Fisheries and Wildlife Conservation and the Environment of the Committee on Merchant Marine and Fisheries, House of Representatives, One Hundred Second Congress, second session ... September 22, 1992.
United States. Congress. House. Committee on Merchant Marine and Fisheries. Subcommittee on Fisheries and Wildlife Conservation and the Environment. Washington : U.S. G.P.O. : For sale by the U.S. G.P.O., Supt. of Docs., Congressional Sales Office, 1992. 136 p. : ill., Distributed to some depository libraries in microfiche.

Descriptors: Mariculture-Research-United-States; Mariculture-Government-policy-United-States; Marine-biotechnology-Research-Economic-aspects- United-States

113. **NAL Call No.: QR1.F44**
Optimization of liquid culture medium for commercial production of Colletotrichum truncatum.
Silman, R. W.; Nelsen, T. C. *F-E-M-S-Microbiol-Lett-Fed-Eur-Microbiol-Soc* v.107(2/3): p.273-278. (1993 Mar.)
Includes references.
Descriptors: sesbania-exaltata; colletotrichum-truncatum; mycoherbicides-; biological-control; fungal-spores; culture-media; cell-culture; biological- production; optimization-

Abstract: A commercial type liquid culture medium for the production of Colletotrichum truncatum NRRL 13737, a pathogen of the weed hemp sesbania, was developed. The concentrations of culture ingredients: 20 g glucose l-1, 2.5 g Tastone yeast extract l-1, 7.5 g Pharmamedia l-1 are optimum for batch cultures. Initial glucose concentration determined total dry weight which was largely composed of mycelia: Pharmamedia concentration influenced the yield and rate of spore production; Tastone 154 yeast extract apparently supplied a nutritional factor which also affected the yield and rate of spore production but to a lesser extent. Batch culture with the described media yielded 6.2 X 10(7) spores per ml in three days. Studies of spore recovery, drying and storage can now be conducted with a commercial type culture medium.

114. **NAL Call No.: SB123.57.R57--1993**
Perils amidst the promise : ecological risks of transgenic crops in a global market.
Rissler, J.; Mellon, M. G.; Union of Concerned Scientists. Cambridge, MA : Union of Concerned Scientists, c1993. v, 92 p. : ill., "December 1993."
Descriptors: Transgenic-plants-Environmental-aspects; Plant-genetic-engineering-Environmental-aspects

115. **NAL Call No.: SB106.B56P59--1993**
Plant biotechnology, commercial prospects and problems.
Pierik, R. L. M.; Prakash, J. J. New Delhi : Oxford & IBH Pub. Co., c1993. ix, 289 p. : ill., Contributed articles.
Descriptors: Plant-biotechnology; Plant-biotechnology-industry; Plant-propagation-In-vitro

116. **NAL Call No.: TP248.27.P55P528--1993**
Plant biotechnology : commercial prospects and problems.
Prakash, J. J.; Pierik, R. L. M. Andover, Hampshire, U.K. : Intercept, 1993. ix, 289 p. : ill., Includes bibliographical references and index.
Descriptors: Plant-biotechnology

117. **NAL Call No.: S539.5.J68**
Policy implications of new technologies in the U.S. dairy industry.
Jensen, F. E.; Park, R. L.; Waggoner, D. B.; Waggoner, D. K.; Dyer, D. R. *J-prod-agric* v.3(1): p.13-20. (1990 Jan.-1990 Mar.)
Includes references.
Descriptors: dairy-industry; technical-progress; biotechnology-; agricultural-policy; economic-impact; market-economics; rural-communities; resource- allocation; environmental-impact; agricultural-research; USA-

118. **NAL Call No.: TP248.195.P47S37-1991**
Possible impacts of biotechnology on Venezuela's agro-industry.
Martel, A. *Biotechnologies in perspective socio-economic implications for developing countries edited by Albert Sasson and Vivien Costarini. Paris : UNESCO* p.133-137 (1991)
Includes references.
Descriptors: agriculture-; biotechnology-; economic-policy; economic-development; research-policy; venezuela-

119. **NAL Call No.: SB317.5.H6**
Potential benefits and risks of herbicide-resistant crops produced by biotechnology.
Dyer, W. E.; Hess, F. D.; Holt, J. S.; Duke, S. O. *Hortic-rev.* v.15p.367-408 (1993)
Includes references.
Descriptors: herbicide-resistance; crops-; biotechnology-; detoxification-; selection-; screening-; hybridization-; gene-transfer; environmental- protection; economic-impact; reviews-; site-of-action-resistance

120. **NAL Call No.: SB205.S7D47-1991**
Potential commercial applications of advances in soybean breeding and biotechnology.
Schillinger, J.; Goss, J. R. *Designing value-added soybeans for markets of the future / edited by Richard F Wilson. Champaign, Ill. : American Oil Chemists' Society, c1991.. p. 118-122.*
Based on presentations at the "81st annual American Oil Chemists Society Meeting," Apr 22-29, 1990, Baltimore, Md.
Descriptors: soybeans-; plant-breeding; genetic-improvement; biotechnology-; industrial-applications; USA-

121. **NAL Call No.: S494.5.B563N33**
Potential economic impact of herbicide-resistant corn.
Tauer, L. *NABC-rep* (1): p.124-132. (1989)
In the series analytic: Biotechnology and sustainable agriculture : Policy alternatives / edited by J.F. McDonald. Paper presented at the first annual National Agricultural Biotechnology Council meeting, May 22-24, 1989.
Descriptors: zea-mays; herbicide-resistance; biotechnology-; economic-impact; econometric-models; simulation-models; supply-balance; profitability-

122. **NAL Call No.: HD9999.B443E8565--1994**
Prescriptions for growth, competitiveness and employment : a response to the Union's 1993 white paper on growth, competitiveness and employment.
Senior Advisory Group Biotechnology.
[Brussels?] : SAGB, [1994] 21 p. : ill., Cover title.
Descriptors: Biotechnology-industries-Europe; Europe-Economic-conditions-1945-

123. **NAL Call No.: SB951.P47**
Prospects and progress for Bacillus thuringiensis-based pesticides.
Cannon, R. J. C. *Pestic-sci* v.37(4): p.331-335. (1993)
Paper presented at the meeting, "Biological Control: Use of Living Organisms in the Management of Invertebrate Pests, Pathogens and Weeds," October 19-20, 1992, London, England.

Descriptors: bacillus-thuringiensis; microbial-pesticides; efficacy-; microencapsulation-; persistence-; genetic-engineering; markets-; pest-resistance; insect-pests; literature-reviews

Abstract: Bacillus thuringiensis (Bt)-based insecticide products constitute the overwhelming majority of biopesticides but, despite having been commercially available for over 30 years, they have made little impact (< 1 %) on the crop-protection market as a whole. This has been largely due to poor cost-performance factors relative to synthetic organic pesticides. However, recent biotechnological advances-including genetic modification-combined with a variety of emerging opportunities, have created the prospect of the commercialisation of a new range of highly effective Bt-based biopesticides. Bioencapsulation of single-gene products-delta-endotoxins from selected Bt isolates-in killed Pseudomonad cells (Mycogen Corporation's 'CellCap'(R) technology), offers a flexible delivery system with enhanced persistence. This versatile approach selects only the most appropriate biotoxins, which can be used to target a number of pest species. It is anticipated that Bt-based pesticides will continue to fill an increasing number of gaps in the panoply of synthetic crop-protection chemicals. Genetically modified products offer advantages in terms of efficacy, flexibility and safety but public concerns regarding perceived risks need to be addressed.

124. **NAL Call No.: TP248.6.L46--1993**
Public attitudes to genetic engineering : some European perspectives.
Lemkow, L.; European Foundation for the Improvement of Living and Working Conditions. Shankill, Co. Dublin, Ireland : European Foundation for the Improvement of Living and Working Conditions, c1993. vii, 44 p., At head of title: European Foundation for the Improvement of Living and Working Conditions.
Descriptors: Genetic-engineering-European-Economic-Community-countries-Public-opinion; Biotechnology-European-Economic-Community- countries-Public-opinion

125. **NAL Call No.: A00043**
A question of taste and feelings as biotech foods hit the market.
IBA-Rep p.3, 5. (1992 Sept.)
Descriptors: food-biotechnology; food-safety; regulations-; new-products; public-opinion

126. **NAL Call No.: 470-Sci25**
A recombinant feast.
Stix, G. *Sci-Am* v.272(3): p.38, 40. (1995 Mar.)
Descriptors: vegetables-; genetic-engineering; marketing-; consumer-attitudes; biotechnology-; USA-

127. **NAL Call No.: QK725.P54**
Regeneration of transgenic plants from the commercial apple cultivar Royal Gala.
Yao, J. L.; Cohen, D.; Atkinson, R.; Richardson, K.; Morris, B. *Plant-cell-rep* v.14(7): p.407-412. (1995)
Includes references.
Descriptors: malus-pumila; genetic-transformation; transgenic-plants; agrobacterium-tumefaciens; shoots-; in-vitro-culture; regenerative-ability; culture-media; kanamycin-; beta-glucuronidase-; enzyme-activity; herbicides-; herbicide-resistance; glean-

Abstract: A transformation system was developed for the commercial apple (Malus X domestica Borkh.) cultivar Royal Gala. Leaf pieces from in vitro-grown shoots were cocultivated for 2 days with Agrobacterium tumefaciens strain LBA4404 containing the binary vectors pKIWI105 or pKIWI110. Shoots were produced on a shooting medium containing kanamycin (50 mg.L-1). A 2-day incubation period on kanamycin-free medium prior to antibiotic selection enhanced the regeneration of kanamycin-resistant shoots. The majority of the kanamycin-resistant shoots also

expressed GUS (beta-glucuronidase) activity. The putatively transformed shoots were rooted on a medium containing kanamycin (50 mg L-1). Rooted plants were established in a greenhouse, and plants transformed with pKIWI110, which contains a mutants Arabidopsis acetolactate synthase gene, were shown to be resistant to the herbicide Glean. Integration of T-DNA into the apple genome was confirmed by PCR and Southern hybridization analyses.

128. **NAL Call No.: QK725.I43**
Regulatory issues for commercialization of tomatoes with an antisense polygalacturonase gene.
Redenbaugh, K.; Berner, T.; Emlay, D.; Frankos, B.; Hiatt, W.; Houck, C.; Kramer, M.; Malyj, L.; Martineau, B.; Rachman, N.
In-Vitro-Cell-Dev-Biol-Plant v.29P(1): p.17-26. (1993 Jan.)
Paper presented at the Session-in-Depth "Field Test Requirements and Performance of Transgenic Plants," 1991 World Congress on Cell and Tissue Culture, June 16-20, 1991, Anaheim, California.
Descriptors: lycopersicon-esculentum; transgenic-plants; genetic-transformation; polygalacturonase-; antisense-dna; fruits-; postharvest-decay; field- experimentation; safety-; regulations-; food-safety; usda-; tomatoes-; USA-; flavr-savr-tomatoes; antisense-genes

129. **NAL Call No.: 302.8-T162**
Research and development of commercial tissue culture systems in loblolly pine.
Handley, L. W.; Becwar, M. R.; Chesick, E. E.; Coke, J. E.; Godbey, A. P.; Rutter, M. R.
Tappi-j v.78(5): p.169-175. (1995 May)
Includes references.
Descriptors: pinus-taeda; micropropagation-; somatic-embryogenesis; genetic-improvement; plant-breeding-methods; tissue-culture

130. **NAL Call No.: S494.5.B563B554**
Research priorities for rice biotechnology.
Herdt, R. W. *Biotechnol-Agric* (6): p.19-54. (1991)
In the series analytic: Rice biotechnology / edited by G.S. Khush an d G.H. Toenniessen.
Descriptors: oryza-sativa; crop-production; biotechnology-; genetic-engineering; disease-resistance; pest-resistance; agronomic-characteristics; research-policy; agricultural-research; estimation-; equations-; cost-benefit-analysis

131. **NAL Call No.: HD1775.S8E262--no.92-8**
Retained ownership revisited : the economic significance of genetic variability.
Feuz, D. M.; Wagner, J. J.; Held, L. J.; South Dakota State University. Economics Dept. Brookings, S.D. : Economics Dept., South Dakota State University, [1992] 7 leaves, "September 1992."
Descriptors: Cattle-Genetics; Animal-nutrition-Genetic-aspects; Cattle-Economic-aspects; Livestock-Genetics

132. **NAL Call No.: SB191.R5R469-1987**
Rice in abundance for all times through rice clones : a possible one-grain rice revolution : a genetic forecast. Possible one-grain rice revolution.
Richharia, R. H. Bhopal : R.H. Richharia, [1987] 132 p. : ill., Includes bibliographical references.
Descriptors: Rice-Genetic-engineering; Cloning-

133. **NAL Call No.: 281.9-C81A-no.93-10**
Royalty collection for patented livestock.
Lesser, W.; New York State College of Agriculture and Life Sciences. Dept. of Agricultural Economics. Ithaca, N.Y. : Dept. of Agricultural Economics, College of Agriculture and Life Sciences, Cornell University, [1993] 23 leaves, "June 1993."

Descriptors: Livestock-Patents-United-States; Livestock-Genetic-engineering-Economic-aspects-United-States; Patents-United-States-Fees

134. **NAL Call No.: SB123.57.I55-1992**
Safety assessment and commercialization of transgenic fresh tomato food products, transgenic cotton products and transgenic rapeseed oil products.
Mitten, D. H.; Redenbaugh, M. K.; Sovero, M.; Kramer, M. G. *Proceedings of the 2nd International Symposium on the Biosafety Results of Field Tests of Genetically Modified Plants and Microorganisms May 11-14, 1992, Goslar, Germany* p.179-184 (1992)
edited by R Casper and J Landsmann. Braunschweig, Germany : Biologische Bundesanstalt fur Land- und Forstwirtschaft.
Includes references.
Descriptors: lycopersicon-esculentum; gossypium-hirsutum; rapeseed-oil; food-products; transgenics-; food-safety; USA-

135. **NAL Call No.: TX341.C6**
Scientists call for hard thinking on 'transgenics'.
Nutr-week v.24(3): p.4-5. (1994 Jan.)
Descriptors: transgenic-plants; genetic-engineering; marketing-; environmental-impact; commercialization-

136. **NAL Call No.: QH442.G456**
Scientists' work may hasten marketing of transgenic fish.
Freeman, K. *Genet-eng-news* v.15(10): p.1, 28. (1995 May)
Descriptors: transgenic-animals; ictalurus-punctatus; gene-transfer; animal-breeding; fish-culture; sex-chromosomes

137. **NAL Call No.: S494.5.B563N33**
Social and ethical implications of animal growth promotants.
Hoiberg, E. O.; Nowak, P.; Bultena, G. *NABC-rep* (1): p.184-189. (1989)
In the series analytic: Biotechnology and sustainable agriculture : Policy alternatives / edited by J.F. McDonald. Paper presented at the first annual National Agricultural Biotechnology Council meeting, May 22-24, 1989.
Descriptors: somatotropin-; pigs-; cows-; growth-promoters; biotechnology-; innovation-adoption; farmers'-attitudes; economic-impact; social-impact; ethics-

138. **NAL Call No.: 64.8-C883**
Socializing nature: technoscience and the transformation of rapeseed into canola.
Busch, L.; Gunter, V.; Mentele, T.; Tachikawa, M.; Tanaka, K. *Crop-sci* v.34(3): p.607-614. (1994 May-1994 June)
Includes references.
Descriptors: brassica-campestris; brassica-napus; technical-progress; technology-transfer; history-; erucic-acid; glucosinolates-; plant-composition; commodity-markets; rapeseed-oil; nutritive-value; plant-breeding; genetic-engineering; Canada-

Abstract: While the constructedness of manufactured products is obvious, plants and animals retain their naturalness even as they are transformed. Yet, there is little doubt that the transformation of plants is a powerful method by which we socialize nature such that it better suits our purposes. This paper examines the transformation of rapeseed (Brassica campestris L. and B. napus L.) from a minor crop used largely for marine lubricants into a major global competitor in edible oil markets. This transformation was brought about in part by the elimination of two components defined as potentially toxic, erucic acid and glucosinolates, as well as by changes in the location of production and processing techniques, and by the suitability of the crop for planting and harvesting by equipment designed for wheat. Of particular note is the role of the Canadian State in providing the large-scale financing necessary for the research

to transform the commodity from a specialty crop into a bulk commodity.

139. **NAL Call No.: TP248.195.P47S37-1991**
The socio-economic impact of biotechnologies on China's rural development.
Xu, Z. X. *Biotechnologies in perspective socio-economic implications for developing countries edited by Albert Sasson and Vivien Costarini. Paris : UNESCO* p.139-147 (1991)
Includes references.
Descriptors: agriculture-; biotechnology-; economic-policy; economic-development; research-policy; economic-sociology; China-

140. **NAL Call No.: 280.8-J822**
A structural investigation of biotechnology impacts on cotton quality and returns.
Chiou, G. T.; Chen, D. T.; Capps, O. Jr. *Am-J-Agric-Econ* v.75(2): p.467-478. (1993 May)
Includes references.
Descriptors: cotton-; biotechnology-; economic-impact; market-prices; fiber-quality; returns-; decision-making; econometric-models

Abstract: A structural quality/quantity choice model is developed to evaluate the impact of improved fiber quality and the resulting economic surplus under biotechnological scenarios. Two major biotechnology scenarios are considered for a comparative analysis of fiber quality improvement. Results show impacts on fiber quality improvement and economic returns.

141. **NAL Call No.: S539.5.J68**
Technical possibilities and economic realities of bovine growth hormone.
Larson, B. A.; Kuchler, F. *J-prod-agric* v.3(2): p.174-179. (1990 Apr.-1990 June)
Includes references.
Descriptors: dairy-industry; somatotropin-; biotechnology-; farmers-; incentives-; innovation-adoption; economic-analysis

Abstract: A growing number of economic studies simulate the effects of widespread adoption of bovine growth hormone (bGH) on the dairy industry. Based on the expectation of large per-cow yield increases due to the use of bGH, these studies assume fast rates of adoption and diffusion of the hormone. The objective of this paper is to analyze the farm-level incentives to adopt the hormone. Our analysis shows why farmers may not have a strong incentive to adopt the new technology and that they may not want to exploit fully the new production possibilities. We show how prices, the change in the milk-yield function, and management skills interact to determine the incentives to adopt or not adopt bGH. Given the incentives to adopt bGH may now be weaker than previously considered, and given the continual decline in projected on-farm milk yield increases due to bGH reported in the literature, we question whether bGH will actually be a shock to the dairy industry (an off-trend technical change) or just a reinforcement to the existing upward trend in milk yields.

142. **NAL Call No.: QH442.B5**
Ti to tomato, tomato to market: a decade of plant biotechnology.
Leemans, J. *Bio/Technol* v.11(3): p.S22-S26. (1993 Mar.)
Includes references.
Descriptors: lycopersicon-esculentum; crops-; agrobacterium-tumefaciens; plasmids-; genetic-transformation; transgenic-plants; gene-transfer; ti-plasmid

143. **NAL Call No.: A00109**
Transgenic crops rushed to commercialization.
Gene-Exch v.3(3): p.1. (1992 Oct.)
Descriptors: field-tests; crops-; genetic-engineering; disease-resistance; usda-; regulations-; federal-plant-pest-act; calgene-; upjohn-

144. **NAL Call No.: QH442.G456**
Undervalued agribiotechnology companies begin their movement toward profitability.
Orr, T. *Genet-Eng-News* v.13(9): p.1, 24, 29. (1993 May)
Descriptors: agriculture-; biotechnology-; private-companies; production-economics

145. **NAL Call No.: QH442.G445**
USDA gives Calgene ok to market genetically engineered tomato.
Genet-Technol-News v.12(11): p.2. (1992 Nov.)
Descriptors: lycopersicon-esculentum; genetic-engineering; usda-; regulations-; USA-

146. **NAL Call No.: QH442.G4522**
USDA moves to speed Bio-Ag commercialization.
Conroy, D. *Biotech-Dly. Washington, D.C. : King Pub. Group.* v.57p.1 (1992 Nov.)
Descriptors: field-tests; genetic-engineering; crops-; usda-; USA-; animal-plant-health-inspection-service

147. **NAL Call No.: A00109**
USDA opens door for commercializing Flavr Savr tomato.
Gene-Exch v.3(4): p.1. (1993 Jan.)
Descriptors: lycopersicon-esculentum; cucurbita-; genetic-engineering; regulations-; usda-; USA-

148. **NAL Call No.: 381-J825N**
USDA opens way to marketing biotech tomato.
Thayer, A. *Chem-Eng-News* v.70(43): p.6. (1992 Oct.)
Descriptors: lycopersicon-esculentum; genetic-engineering; usda-; regulations-; food-safety; testing-; USA-; dna-plant-technology; monsanto-; ici-

149. **NAL Call No.: S75.F87**
The values of biotechnology.
DePolo, J. *Futures* v.12(1): p.20-27. (1994 Spring)
Descriptors: biotechnology-; productivity-; agriculture-; society-; social-institutions; policy-; moral-values; public-opinion; risk-; economic-impact; sustainability-; accountability-; environmental-impact; ethics-

150. **NAL Call No.: HB1.A2N3--no.5342**
Virtuous circles of productivity : star bioscientists and the institutional transformation of industry.
Zucker, L. G.; Darby, M. R.; National Bureau of Economic Research. Cambridge, MA : National Bureau of Economic Research, c1995. 35, [2] p. : maps, "November 1995."
Descriptors: Biotechnology-Economic-aspects; Biotechnology-industries

151. **NAL Call No.: TP248.195.P47S37-1991**
Will biotechnologies be a threat or an opportunity for the south? A report on the current status and future targets for biotechnology-aided development in Africa, in particular Zimbabwe.
Robertson, I. *Biotechnologies in perspective socio-economic implications for developing countries edited by Albert Sasson and Vivien Costarini. Paris : UNESCO* p.123-128 (1991)
Includes references.
Descriptors: agriculture-; biotechnology-; economic-policy; research-policy; economic-development; Africa-; Zimbabwe-

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